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Integrity Management for Wrinklebends and Buckles #132
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In this period, our investigation is focused on (a) the full-scale experimental validation of our proposed wrinklebend criteria, (b) the effect of pipe dimension size or R/t ratio on wrinklebend criteria, and (c) the evaluation of the corrosion effects on wrinkle shape as well. Results indicate that the estimated service life determined from our proposed model reasonably agrees with the full-scale experimental data. Such validation of full-scale experiments verified that our proposed wrinklebend criterion is viable and effective, and thus can be used in wrinklebend integrity analysis. For different pipe sizes, it is found that the wrinklebend damage increases with increasing R/t ratio until a value of 25 is reached, and then the damage will remain unchanged or be independent of the R/t ratio if this ratio is large than 25. Such effects of corrosion defects on wrinklebends are quantitatively built in the proposed criteria. To evaluate corrosion effects on wrinklebends, corrosion defects with different widths and lengths are examined in finite element calculations. It is found that corrosion defects has almost no effect on the wrinkle shape, except for very long defects, which reduces the wrinkle shape defined by H/L. Further investigation of corrosion effects on wrinklebends is ongoing.